Comments and responses to the second draft of the risk profile on Dechlorane Plus (DP) and its isomers

Only substantial comments are included in the table. Editorial comments and amendments are not shown.

Source of Comment	Page	Para	Comments on the second draft of the risk profile on Dechlorane Plus and its isomers	Response
Canada	3	6	Suggest using "recycling" throughout document, in reference to e-waste, since e-waste is not generally "treated".	Accepted. Text has been edited.
Canada	3	7	It is suggested to add mirex to the list (see our comment on paragraph 44 below for details).	Accepted.
Canada	3	8	Suggest removing the range as it may not be necessary in the summary, and the range associated with BCF>5000 is stated elsewhere in the document as "around 8-10 days". Therefore, having this sentence associate a >6-day depuration half-life with a BCF>5000 is potentially misleading, and somewhat contradictory to later text in the RP.	Suggested text amendment was accepted.
Canada	3	10	Recommend adding information supporting this statement in Section 2.4.3 (Human Toxicity) or removing this sentence. Canada 2019 considered various lines of evidence, but did not identify an appropriate analogue for chronic toxicity when characterizing hazard to human health.	Comment noted. This is the standard phrase used in Stockholm Convention. It will be up to POPRC to decide how this wording will be in the end.
Canada	4	10	Suggest to add 'Available assessments and laboratory studies with mammals suggests that DP is not carcinogenic or mutagenic.'for completeness.	This content was removed.
Canada	4	14	"OxyChem, 2019)". - Not included in the reference list, please add.	Text has been edited.
Canada	4	14	Suggested addition. "The structural formula of DP and its two isomers is shown in Figure 1 below."	Accepted. Text was added.
Canada	4	Table 1 sub-text	Suggested addition, based on the name of the model. "Estimation Program Interface Suite for Windows"	Accepted. "…for Windows was added".
Canada	4	Table 1 sub-text	Suggest removing the group contribution method. The value -3.5 was derived using the bond contribution method of the HENRYWIN alone. The analysis using the group contribution method indicates "incompletion" and does not produce any numerical value.	Not accepted. The full output of EPI Suite was checked. This result using the bond method seems to be okay, while the group method could not be applied to all fragments and is thus not reliable.
Canada	7	28	Comment to " estimated tonnage of 100 – 1000 tonnes per annum"	Text was edited in response to comment.

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			-If available, suggest to provide the specific years or range that this estimate	
Canada	8	31	To be consistent, suggest including in the reference list instead.	Accepted.
Canada	8	35	To be consistent, suggest including in the reference list instead.	Accepted.
Canada	9	43	Consider revising this section for clarity (e.g. what is the yield of? Is it the yield of remaing DP? Or free chlorine? Or dechlorination products?). Some edits were suggested for consideration.	Text was edited in line with the suggested changes.
Canada	9	44	Mirex, a potential analogue for DP for toxicity in terrestrial organisms (see comment on paragraph 97 below) is not included here. According to BIOWIN, this substance is also predicted to have limited biodegradation like DP. It is suggested to add this substance to the list.	Accepted.
Canada	10	48	The values presented here are approximately an order of magnitude lower than the Tomy et. al. 2008 values in the next paragraph.	Comment noted, some revisions were made to make this clear.
Canada	10	48	Comment to: "DP showed slightly shorter depuration times (syn- and anti-DP were 6.3 and 7.2 days, respectively) when muscle was analysed, than reported in Tomy et al. (2008)." *- Suggest moving this to paragraph below. Also, the sentence is comparing to Tomy et al. 2008, but Tomy values for muscle are not included. Please add Tomy values for muscle to the paragraph below if they are available.*	Some rearranging of these paragraphs has been done for clarity. Tomy et al 2008 did not provide numbers for muscle only so direct comparison is not possible.
Canada	10	49	Please write out days for consistency throughout the document.	Accepted.
Canada	10	50	Comment to " ...were also reported for DPMA (impurity in commercial DP), *anti*-Cl_{11}-DP and *anti*-Cl_{10}-DP (Wang et al., 2015),.." -A discussion on impurities and by-products may be outside of the scope of the RP. If this information is kept, suggest to distinguish which specific impurities and byproducts have a TMF>1, rather than only presenting the range of TMF values.	Comment noted, amendment made.
Canada	10	51	Consider revising "enrichment" to "concentration"	Accepted. However, this sentence was deleted to save some words.
Canada	10	51	Please clarify. «Opposite » in the sense that the anti-isomer is preferentially absorbed? Or that there is no stereoselectivity of relative absorption levels?	This sentence has been removed.

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Canada	11	52	Editorial suggestion. Recommend revisiong to "exposed" or "environmentally exposed".	Accepted.
Canada	11	52	Comment to "..., resulting in syn-DP isomer being predominant in this study" *- Suggest removing. It is unclear what the meaning or significance of this statement is. It appears redundant to the preceding text in the same sentence. Additionally the phrase "predominant in the study" is unclear. The study appears to establish that syn-DP is predominant in just one tissue compartment (liver) of in ovo exposed embryos. But no other significance of the findings is described. It is not clear if this is due to absorption or metabolism, or whether this "predominance" resulted from biological or chemical processes, inside or outside the embryo.*	This sentence has been removed.
Canada	11	52	Editorial suggestion, for consistency. in ~~for seagrass (~~marine algea~~)~~ (*Ulva pertusa*)	Accepted. However this sentence was deleted to shorten the document.
Canada	11	54	Comment to "in 2006", exchange with " sampled between 1990-2000" *-Please verify and add correct sampling date range for context. It appears from Hoh 2006 that samples were taken at time points from 1980-2000, and that calculations were based on samples from 1990- 2000: "Archived fish samples (walleye), taken from Lake Erie in 1980, 1984, 1990, 1992, 1994, 1996, and 2000 were obtained from the U.S. Geological Survey. Except for 1980 and 1984, there were three samples in each sampling year, and the reported concentrations of the brominated diphenyl ethers (PBDEs) and of DP in each year were the average of these three samples".*	Thank you, numbers corrected to 1980 to 2000.
Canada	11	56	This sentence feels incomplete, consider specifying the media. '… airborne particles in the atmosphere'?	Text has been amended in response to the comment.
Canada	11	56	Consider adding a reference for this statement.	Reference was added to the sentence.
Canada	12	57	Please add a reference for this statement, as this information is not reported in the Canadian assessment (Canada, 2019a) (i.e. the Canadian assessment reports Pov as 260 days, and did not report 98.82% partitioning to aerosols).	Text has edited in response to this and other comments to this paragraph/ text section.
Canada	13	68	Suggest removing the comparison between the two studies. Ellasjøen is postulating	Accepted. Text has been amended.

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			long-range transport while Desjardins is postulating local transport.	
Canada	13	69	Suggest removing the comparison between the two studies. Ellasjøen is postulating long-range transport while Desjardins is postulating local transport.	Text in this paragraph has been edited in response to this and other comments.
Canada	13	69	This sentence is unclear, consider rephrasing, e.g. '… postulated to contribute to increased local exposure'?	Accepted. Text has been amended.
Canada	13	70	Editorial suggestion, to shorten the sentence.	Text has been amended.
Canada	15	80	Suggest defining what ΣDP include throughout the document (i.e. sum of the two main isomers, or includes other DP metabolites or DP compounds).	A definition of DP was included in the introduction.
Canada	26	85	Normally « between » would be associated with a range, e.g. "between 2003 and 20XX". Please check, and revise as appropriate.	Text has been revised to include time periods.
Canada	17	86	Recommend to remove "….; however, the authors highlight that underlying time trends may have been obscured by large intraspecies variation in concentration levels." In the original paper, the reference to intraspecies variability was made specifically in discussion of PBDEs, and indicates that there was no trend for DP.	Accepted.
Canada	17	87	Consider defining β-BDE-DBCH, BEH-TEBP	The text has been amended. The full name of these compounds has been included in the text.
Canada	17	88	Suggested addition, for consistency with paragraph 2., "indoor and ambient "	Accepted.
Canada	18	90	Consider removing, as this is not relevant to DP. " High dietary intake of halogenated flame retardants (HFRs) via home-produced eggs in Baihe village was estimated and revealed potential health concerns for local residents due to high consumption of PBDE"	Accepted.
Canada	18	90	Editorial suggestion. Since levels of DP in eggs are not relatively related to temporal trend discussion in first part of sentence.	Accepted.
Canada	19	97	If this paragraph is retained, this should be revised to refer to the Screening Assessment Report (Canada, 2019a).	Corrected.
Canada	19	97	*It is suggested that paragraph 97 be replaced with the paragraphs that have been proposed for addition to the text, which elaborate on how the use of analogues can be considered as an approach to addressing key data gaps.* *The proposed paragraphs encompass both aquatic (sediment) and terrestrial*	Not accepted since the text is too long already, however we included also a short paragraph to the terrestrial part as well.

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			organisms. The authors may consider splitting these paragraphs between the 'Toxicity to aquatic organisms' and 'Toxicity to terrestrial organisms' Sections. *Alternative paragraph 97 97. Considering its physical/chemical properties, DP is expected to predominantly reside in soil and/or sediment. Recognizing the lack of effects data for DP in these important compartments, the use of analogue data can be considered as an approach to addressing key gaps in the hazard profile. In selecting analogues, factors such as structure, reactivity, metabolism and bioavailability can be considered.* *98. Because DP is a replacement for the flame retardant use of the organochlorine mirex (Feo et al. 2012), and due to the availability of soil toxicity endpoints for mirex, it was selected as an analogue to address the lack of effects data for DP in this compartment. Chlordane was identified as an analogue due to its structural and functional similarities to DP, determined by the OECD (Q)SAR Application Toolbox (2016). Due to the availability of benthic endpoints for chlordane, it served as an analogue to address the lack of benthic toxicity data for DP. Use of these analogues is considered conservative, as their higher water solubility renders them more bioavailable than DP, and therefore, the receptors may experience higher internal exposures.* *100. The Canadian screening assessment used these analogues to address sediment dwelling organisms and terrestrial (plant) organisms, with estimated DP predicted no effect concentrations (PNEC) of 0.0129 mg/kg dw and 0.075 mg/kg dw respectively (Canada, 2019a).*	
Canada	19	98	Comment to " reactive oxygen species (ROS) *- Suggest to move this up from paragraph 101, since this is the first time this abbreviation is used.*	Accepted.
Canada	19	98	Editorial suggestion: "... , the ~~enrichment~~ [uptake/absorption] of DP affected physiological responses of photosynthesis and caused oxidative stress (Gong et al.,	Suggestion accepted.

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			2018). Following a 21-day ~~uptake~~ exposure...."	
Canada	19	98	Comment to "~~...., indication a hormesic response to DP exposure~~" *-Suggest to remove. While this wording accurately reflects the wording from the study, the term hormesis may not apply in this situation. Matson in part defines it as ".. a term used by toxicologists to refer to a biphasic dose response to an environmental agent characterized by a low dose stimulation or beneficial effect and a high dose inhibitory or toxic effect." https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2248601/* *What is described here is the seem to be the opposite of hormesis, i.e. "negative effects on photosynthetic endpoints at low doses" and increased chlorophyll content at highest dose.*	Phrase has been removed.
Canada	20	100	Why are the exposure levels only provided for Kang et al., 2016? It is suggested to add this information for Noyes et al (2015) and Chen et al. (2017) if available, or alternatively to replace this sentence by a general statement indicating that 'No significant adverse effects on hatchability, survival or malformation were seen in the Noyes et al. (2015), Chen et al. (2017) and Kang et al. (2016) studies following exposure to DP at a concentration of up to […]' that would encompass the 3 studies.	Suggested alternative has been included.
Canada	21	2.4.2	As suggested above in our comment on paragraph 97, the authors may consider adding information on the use of mirex as an analogue for soil (plant) effects.	Accepted.
Canada	22	113	Comment to " The dosing vehicles might also limit exposure (e.g. due to the presence of undissolved micro-crystals), such that the high doses might not truly reflect the degree of exposure of the organisms " *- Please quantify or qualify this statement, by providing information on at what dose levels crystals were observed. For example, if no crystals were observed in the 2nd highest dose, it could be concluded that animals received at least this dose. In terms of environmental relevance, these are very high dose levels in this study. The fact that concentrations may have exceeded the solubility in the vehicle at the highest or higher dose levels does not*	Comment noted, and some amendments made to the text.

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			necessarily limit or negate the interpretive value of the study.	
Canada	23	117	Comment to : "~~In the repeated dose toxicity phase"~~ Editorial suggestion, as this text is not necessary, nor adds much of value.	Accepted.
Canada	23	117	Comment to "toxicity phase" - *This statement might be confusing to readers given the previous statement regarding a lack of dose-response changes in organ weights, which included the thyroid/parathyroid.* *Consider adding that these results were not observed at the higher doses, and that the authors considered that they were not test article related (not dose related; no microscopic changes).*	Some amendments made to the text.
Canada	23	117	Comment to " the 1500 mg DP/kg bw group compared to control (0.8 and 5.39%, respectively) were observed" - *Consider adding that the authors noted that this was not considered related to treatment due to lack of similar response at the high dose.*	Not accepted, considering that the highest dose is 5 x higher that recommended by OECD test guidelines. It does not seem valid to consider effects only observed at lower dose as not relevant due to lack of similar response at the higher dose.
Canada	23	117	Comment to "...% compared to control for the 750, 1500 and 5000 mg/kg groups." - *Consider specifying that the authors stated that these effects were not related to treatment.*	Some amendments made to the text to reflect this. However, at the time this study was conducted the authors had no hypothesis to link the increase in pup weight to. (e.g studies reporting possible influence on PPAR-γ and thyroid hormone pathways came later).
Canada	23	117	Comment to "...of DP's' ability to activate the peroxisome proliferator-activated receptor PPRAR-γ ..." - *Consider revising for clarity. Suggest separating into two statements to make the hypothesis clearer, starting with the linkage of DP and direct activation of PPAR from Peshdary et al, and then the link between PPAR and pregnancy/fetal outcomes.*	Amendments made to the text.
Canada	23	118	Comment to "A few studies have investigated possible association between DP and the thyroid hormone (TH) homeostasis and lipoproteins in humans" -*Suggest characterizing the co-exposures to other chemicals here within the text, and whether the association with effects was an association specifically with DP, or an association with a chemical mixture including DP?*	Comment noted; however, this is an epidemiology study, and thus a mixture exposure. No amendment made to the text. The results on TH effects observed was different depending on which control parameters that were included in the correlation analysis as written in the text. When PBDE levels were included in the analysis as a control variable, correlation between

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				DP levels and TT3 levels were observed.
Canada	23	120	Comment to "very persistent" *- Suggest using the term "persistent", as per the Stockholm Convention text, unless "very persistent" is a quote that can be directly attributed within this text to ECHA, or another reference.*	Accepted.
Canada	24	124	Comment to " aldrin, mirex, and chlordecone" *-Inconsistencies are noted between this series of listed substances, and those in paragraph 7 (i.e. chlordane, heptachlor, dieldrin/endrin, aldrin and endosulfan). Consider revising to include the same list of substances, unless the intent here differs from paragraph 7.*	Comment noted, text has been revised to focus on the monoadduct in this paragraph.
Canada	24	124	Comment to ".. , and visa versa for other pollutants" *- This may not be needed, suggest removing.*	Accepted. Text has been revised.
Canada	24	Table 5	This Table is a great addition. It is recommended to add a reference to Table 5 in the text.	A reference to this Table was included in the start of Chapter 2.
Canada	24	Table 5	Since Peshdary et al. (2019) is an in vitro study, consider distinguishing before the parenthesis.	Accepted.
China	Overall comments		There are multiple places where the data quoted from the references are inaccurate or nonstandard, or the results have been selectively adopted, which may have an effect on the scientificity and authority of the evaluation result.	The risk profile for DP is based on peer-reviewed and gray literature as well as information from parties and observers. The objective is to present the available data in a balanced manner using a weight-of-evidence approach and not selectively present data or include inaccurate, or nonstandard data. Response to detailed comments are provided below.
China	3	6	Comment to "On a global scale, the highest DP concentrations were detected in the United States and China close to known production sites or electronic waste (e-waste) treatment facilities." *-Please delete this sentence and replace it with "On a global scale, DP is ubiquitous in the environment". Study has proved that DP exists extensively in global environment and it is biased to only point out individual regions.*	This is factual information from peer-reviewed literature that is relevant to the risk profile. However, to accommodate the comment and since this level of detail of is not necessary in the executive summary information on the countries have been omitted from the text.
China	3	9	Comment to " Highest DP levels have been observed in occupationally exposed workers or residents living near production	This is information is from a peer-reviewed scientific paper and is relevant to the risk profile. However, to accommodate the comment, and since

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			facilities and e-waste recycling sites in China." - *Please delete this sentence. The data are yet to be verified. And it is strongly directional, subjective, and unfair to point out one country*	this level of detail of is not necessary in the executive summary, "…in China." was deleted from the sentence.
China	5	18	Comment to "For example, Li et al. (2013b) found a mono-dechlorinated substance (DP-1Cl or DP-Cl_{11}) in the commercial substance produced by Jiangsu Anpon Co. Ltd., China." - *Please delete this sentence. This is a mistaken cite of reference. It cannot be found the information on the mono-dechlorinated substance (DP-1Cl or DP-Cl_{11}) existing in the commercial substance in the reference (Li et al., 2013b).*	Text has been edited and information on the origin of the commercial substance was deleted.
China	8	34	Comment to "A recent paper reported detection of DP in plastic castings from two TVs and one computer, but not in circuit boards from similar equipment collected from a recycling facility in China (Li et al., 2018, 2019c). " - *Please delete this reference which has been mistakenly cited. The reference (Li et al., 2018), which is a study on the characteristics of polybrominated diphenyl ethers released from thermal treatment and open burning of e-waste, has nothing to do with DP.*	Accepted. The reference Li et al. 2018 was deleted as this only contains information on PBDEs.
China	8	39	Comment to "In China, about 10 – 15 % of sewage sludge generated per year is used as fertilizer (Dai, 2011 reviewed in Ji et al., 2018) and can therefore present a potential risk if it contains hazardous substances (Ji et al., 2018). " - *Please delete this sentence. The reference has been mistakenly cited and the selected content has nothing to do with the present profile.*	Text has been edited in response to the comment.
China	9	42	Comment to " In China, detections in indoor dust included an office, a hotel, a kindergarten classroom, and a student dormitory, as well as one outdoor (road dust) microenvironment. The highest concentration was found in hotel dust (124 000 ng/g) followed by dormitory dust (14 200 ng/g), and kindergarten classroom dust (231 ng/g) (Cao et al., 2014)." -*Please delete the selected sentences. DP in China is mainly for export with limited domestic use. The concentration in the*	Comment noted. This paragraph has been revised.

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			environment is yet to be verified. In addition, it is neither scientific or fair to represent the overall level in China with only a single sample	
China	9	45	Comment to (Zhang et al., 2016) *Please delete the reference (Zhang et al., 2016) which has been mistakenly used. No information on the half-lives could be found in the reference (Zhang et al., 2016).*	Not accepted. The half-lives for primary and ultimate biodegradation in soil ($t_{soil,1/2}$) were obtained using EPISuite's BIOWINv4.10 model (USEPA,2013) and CATALOGIC 301C model (LMC, 2011). Results were presented in Supplementary information Table S5.
China	10	51	Comment to "(TMF ranging 0.53 – 5.4)" - *Data in the reference has been mistakenly cited. TMF ranging "0.53-5.4" should be "0.53-5.8".*	Sentence has been amended.
China	11	57	Comment to (Ren et al., 2008) - *Please delete this reference which has been mistakenly cited. No related information could be found in the original reference (Ren et al., 2008).*	Accepted. This mis-citation is due to earlier amendments to the text. The mentioned paper was deleted.
China	14	74	Comment to " With the continuous phasing out of the production of decaBDE and the demand for alternatives, it is likely that DP and decabromodiphenyl ethane (DBDPE) will become the major halogenated flame retardants present in the Chinese environment in the near future (Zhu et al., 2014)." - *Please delete this sentence. There has never been large-scale use of DP in China, so the conclusion is inconsistent with the reality.*	Accepted as this information is captured in para 85 where the findings of Zhu et al. 2014 is described more in detail.
China	15	83	Please delete this paragraph. This is a mistaken cite of reference. The content has nothing to do with this risk profile.	Not accepted. At the moment, no other source than DP production has been linked to DPMA presence in nature.
China	16	86	Comment to "possible as a replacement of decaBDE" - *Please delete the selected content because the price of DP is relatively higher than that of BDE-209 and there is no such process in China as using DP as a replacement for BDE-209.*	The text in this paragraph has been edited.
China	16	87	Comment to " Although the difference was not significant, it suggests a decrease in BDE-209 levels relative to DP possibly reflecting a shift in the use of these flame retardants. In a study on Indo-Pacific humpback dolphins and finless porpoises from the South China Sea, Zhu et al. (2014) found a positive temporal trend in the ratio of DP to BDE-209 between 2003. The finding was assumed to indicate a shift in the use of flame retarndants from	The first sentence was deleted as the difference was non-significant. The latter two sentences were retained as they reflect information from a peer-reviewed scientific publication and as the deletion suggested in para 75 was accepted.

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			PBDEs to other alternatives such as DP in China. " - *Please delete these three sentences. As stated above, the price of DP is relatively higher than that of BDE-209 and there is no such process in China as using DP as a replacement for BDE-209.*	
China	17	89	Comment to "(mean 231 ng/g)" - *This is a mistaken cite of reference. There is only one composition sample from kindergarden classrooms in the reference (Cao et al., 2014), so there is no average value*	Accepted.
China	17	90	Comment to "The atmospheric concentration (11 pg/m3) in Osaka city was comparable to that reported for urban areas in China despite no DP manufactoring facilities in Japan." - *Please delete the selected sentence. It is not suggested to make such comparison as being directional.*	Sentence has been revised.
China	17	91	This is a mistaken quote of reference data. "1270" should be "1370".	Thank you, number corrected.
China	17	91	Comment to " Estimated dietary intake dose accounted for more than 99% and 93% of the daily intake to people included in the study from the production site and e-waste site, respectively, which assumed that consumed food was produced locally (Wang et al., 2013a)." - *Incorrect statement. The reference has been mistakenly cited. The original statement from the reference (Wang et al. 2013a) is: "The dietary intake dose accounted for >99% of the daily intake and vegetable, grains, and fish accounted for 93% of the dietary intake".*	No amendments made to the text as this is the results from the article.
China	18	91	Comment to" High dietary intake of halogenated flame retardants (HFRs) via home-produced eggs in Baihe village was estimated revealed potential health concerns for local residents due to high consumption of PBDE (Huang et al., 2018)." - *Please delete this sentence since it is not related to DP.*	Accepted.
China	22	115	This is a mistaken cite of reference. The exposure dose in the original text of the reference is mg/kg-bw rather than mg/kg-bw per day	Not accepted. The animal received this dose once daily for 28 days, so this is the way to describe this fact with less words.
China	22	118	This is a mistaken cite of reference. The exposure dose in the original text of the	Not accepted. The animal received this dose once daily for 10 days.

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			reference is mg/kg-bw, rather than mg/kg-bw/day	
China	23	122	Comment to "Furthermore, DP is currently a high production volume chemical that is marketed as a replacement for already regulated flame retardants, suggesting that use could increase in the future. " *- Please delete this sentence. The production volume of DP is not high compared with that of decaBDE and only the US and China produce DP in the world, so the conclusion that use could increase in the future is not consistent with the reality.*	The sentence as revised in response to this comment and new information that production in the US may have ceased.
EU	2	4	Comment to "DP is produced by the Occidental Chemical Company (OxyChem) in Niagara Falls, New York, " *- A comment has been received from OxyChem saying: ..."should be corrected to indicate that Occidental Chemical no longer manufactures Dech Plus and Occidental Chemical Belgium BVBA no longer imports Dech Plus. They further explain that Occidental Chemical no longer manufactures Dech Plus. On 12-December-2017, Occidental Chemical Belgium BVBA submitted a "Cease manufacture or import" notification using REACH-IT. Please see separate document for the whole comment.*	Text was amended, but kept short in the executive summary but further elaborated in later paragraph.
EU	6	21	Comment to " Inclusion on this list means the substances can be subject to further review,.." *- What is the exact meaning of this sentence. Is it referring to the manufacturing and use of the substances that can be subject to further review (or control measures).*	Sentence was deleted.
EU	6	21	Comment to " provide professional users and distributors .." *-« recipient of the article » is used in the legal text of REACH*	Text was corrected.
EU	7	28	Comment to ", DP is manufactured by Occidental Chemical Company (OxyChem) in Niagara Falls, New York," A comment has been received from OxyChem saying: .."should be corrected to indicate that Occidental Chemical no longer manufactures Dech Plus and Occidental Chemical Belgium BVBA no longer imports Dech Plus". They further explain that Occidental Chemical no longer manufactures Dech Plus. On 12-December-2017, Occidental Chemical Belgium BVBA submitted a "Cease	Text was amended to reflect the provided information.

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			manufacture or import" notification using REACH-IT. Please see separate document for the whole comment.	
EU	9	42	Comment to" Furthermore, studies with fish indicate a very low potential for biotransformation and provide supporting evidence that DP is metabolically stable, and therefore persistent in the environment (Tomy et al., 2008, ECHA, 2017b)." *-We would not include evidence of low biotransformation rates from a BCF study to indicate persistence. We understand persistence in the environment being a result of low rates, or lack of abiotic and/or microbiological degradation processes, not low/no metabolism within organisms. In the ECHA support document, this Tomy 2008 study is only referenced in the Bioaccumulation section.*	Accepted. The mentioned text was deleted.
EU	9	44	Comment to: "a number of analogue chemicals" *- These analogue POPs have higher bioavailability and polarity than Dechlorane Plus and hence Dechlorane Plus is expected to be at least as persistent. Would it be of value to include this to the statement?*	Some amendment was made to the sentence to indicate this.
EU	9	46	Comment to " as low ability to biotransform in fish support" *- As stated above, we believe this argument should be in the section on bioaccumulation.*	This was deleted.
EU	10	48	Comment to "(Wang et al., 2019)" *- Since this is the only aquatic BCF result in the dossier, some discussion of reliability/relevance could be good. Was steady-state reached, was there a depuration phase? Is it a guideline study, GLP.*	Comment noted, some more information about the study was included in the risk profile and also the INF-doc table 2. See also details from the material and methods provided in the answer to UK and POPRC-member 1. The study included appropriate controls.
EU	10	48	Should it be specified that the depuration half-life in Tomy et.al study was for whole fish excluding the liver?	This detail was provided and also included in the INF-doc.
EU	10	49	For whole fish minus the liver. Should it be specified?	Information has been added.
EU	10	49	Comment to "highly indicative of a very bioaccumulative substance "	We believe this is not necessary to fulfill the bioaccumulation

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			- In the ECHA SVHC document (Table 9, p. 45) benchmarking to other known vB and POPs substances with values for depuration half-life and BCF has been made. Would mentioning of this benchmarking provide additional evidence to this argument?	requirements in Stockholm Convention.
EU	10	49	Comment to "without any anomalities" *-What does this means? Without abnormal effects?*	This text has been revised.
EU	11	58	Result highly dependent on input values. Do we know what they are? How reliable are these predictions? In ECHA support document significantly different results (higher half-life and travel distance) have been reported and the results are said to be uncertain (also said below in 59). What are the reason to choose the Canadian predictions?	Text has been edited in response to this and other comments to this paragraph.
EU	11	59	Comment to "largely because most of the input parameters are estimated" *- Is this also the case for the Canadian predictions cited above, or was this for the ECHA predictions?*	Text has edited in response to this and other comments.
EU	20	101	Comment to "to 6.4 µM DP (4.18 mg/L)". *-We would guess this is a nominal value. Consider specifying.*	Nominal was included.
EU	20	101	Comment to " doses (15,20 and 60 ug/L) *--We would guess this is a nominal value. Consider specifying.*	Nominal was included.
EU	20	102	-We would guess this is a nominal value. Consider specifying.	Nominal was included.
EU	21	105	Comment to " Transcriptional responses of both thyroid and sex hormone related genes in the brain were altered" *- It is our understanding that some of these effects were statistically significant, others not. Would there be a need to specify?*	Some more details concerning significance were added.
EU	21	107	Comment to Yang et al., (2016) and Zhang et al (2014) *- These are probably nominal concentrations? Please specify.*	Specification was added.
EU	21	107	*Consider adding «-(bio)marker » responses to clarify what the NOEC refers to.*	Biomarker was added.
EU	21	113	Consider specifying which type of toxicity testing (genotoxicity and (pre-natal) developmental toxicity).	Specification on type of studies was included.
EU	24	Table 5 persistence	Comment to " and low ability to biotransform in fish (Tomy et al ., " *-As we have commented before, we would not use this as indication of persistence (see previous comments).*	This has been deleted.

Source of Comment	Page	Para	Comments on the second draft of the risk profile on Dechlorane Plus and its isomers	Response
EU	24	Table 5 bioac.	BCF may be better to use here. In sec 49 the EA of UK is referenced when making correlations between depuration half-life and BCF (not BAF).	Comment noted, statement have been amended.
EU	24	129	Comment to "PPAR" - *This abbreviation is not explained before and it is not known to us. Would it need to be explained*	The full name of this receptor "peroxisome proliferator-activated receptor gamma" has been included in the text.
Germany	3	3	"DP and its isomers are only known intentionally produced." *-Unclear meaning, perhaps change to: "only DP and its isomers are known to be intentionally produced", if that is what was meant.*	Accepted. Text has been edited.
Germany	3	10	"long-term studies exiding 90 days are missing" Typo: "exceeding" Consider changing to "Studies on chronic toxicity are missing"	Sentence was partly rewritten.
Germany	6	19	In the commenting round of the first draft, Germany and IPEN made a comment on this para, with opposite intentions, and interestingly they were answered as contradictively. *As IPEN states, these "issues" are not reflected in the decision, but are referred to in § 42-44 of the meeting report. Thus, it would be useful if the drafter refers to these concerns in the DRP and explains how they have been taken care of, either in this para or elsewhere.*	We can't see the contradictions in the responses to IPEN and Germany. IPEN commented on the unusual wording in this standard phrase where we included "issues" Sentence from first draft: "It was decided to review the proposal further and to prepare a draft risk profile in accordance with Annex E to the Convention and that issues related to the inclusion of Dechlorane Plus and its *syn*-isomer and *anti*-isomer should be dealt with in developing the draft risk profile." This was later changed to more standard phrase: "The Commitee decided to review the proposal further and to prepare a draft risk profile in accordance with Annex E to the Convention". To accommodate Germany a reference to the report has now been included in the text.
Germany	9	41	"Indoor dust is the sink and carrier of many pollutants including DP released from household products, which are also considered to be the main source of pollutants in WWTPs receiving only domestic wastewater (Katsoyiannis and Samara, 2004; "Xiang et al., 2013)." *Sentence confusing. Perhaps separate into 2 sentences?*	Text has been revised as suggested.

Source of Comment	Page	Para	Comments on the second draft of the risk profile on Dechlorane Plus and its isomers	Response
Germany	9	45	"statistically distinguishable" is that meant to mean "statistically significantly differing"?	Text has been amended.
Germany	12	66	"Other detections in Arctic air include Alert…" Consider changing to "Other sampling sites with positive detections in Arctic air include Alert…" for clarity.	Text has been edited and the word "positive" was included to describe the detections made.
Germany	13	70	"These findings were by the authors considered indicative of long-range transport as a source…" Sentence mixed up, change to: "The authors considered these findings to be indicative of long-range transport as a source…"	Text has been amended in response to comment.
Germany	19	98	Write out ROS	Accepted.
Germany	23	121	"DP levels in remote regions are comparable to listed POPs and, in some studies, reported to be in the same range as in source regions." Comparable to which level: level of listed POPs today, after cessation of production and use? Or to levels at the time of use? How does this compare to produced tonnages?	Text has been amended in response to comment.
Republic of Korea	8	36	NIER clarified unclear information. Please insert as new para 36 "Based on the information gathered from a 'Statistical Survey of Chemicals' conducted under the 'Chemicals Control Act' in 2010, 2014 and 2016, no DP was manufactured in the Republic of Korea. There were no DP imports in 2010, but usage was around 40 tonnes. In 2016, 11 tonnes were imported and 17 kg was used. Approximately 0.9 tonnes of exports were known in 2010, but there have been no exports since then. (Annex E information, Republic of Korea)."	New paragraph with some amendments to shorten the text has been inserted.
Republic of Korea	14	75	Please remove ".. and lower than in tree bark from areas in the northeastern US (0.03–115 ng/g) and ~~Korea (1.4 ng/g)~~, which are sites influenced by DP manufacturing facilities (Qiu and Hites 2008)." - This reference does not mention that the sites in Korea are influenced by DP manufacturing facilities. Therefore, it needs to be removed.	Text has been amended to accommodate the comment.
Republic of Korea	17	89	Please amend the text as suggested. NIER clarified unclear information and added some information that this relefence	Text has been amended as suggested.

Source of Comment	Page	Para	Comments on the second draft of the risk profile on Dechlorane Plus and its isomers	Response
			implies: " In 175 samples of 35 different foodstuff from the retail market in the Republic of Korea, the mean ΣDP was in the range from ND-170 pg/g ww, and *syn*- and *anti*-DP was detected in 83.4 and 79.4% of the foodstuff, respectively (Kim et al., 2014). Daily intake of DP was estimated to 11.2 × 10^3 pg/day, which was 3 orders of magnitude higher than for other dechloranes (Dec 602, 603, 604 and Mirex). ~~Furthermore, grain was the most contributing food group to daily intake for Korean population.~~The highest level of DP was found in bovine liver ΣDP 170 pg/g ww followed by spanish mackerel, oysters and dried anchovy with 135, 81 and 78 pg/g ww, respectively. However, in this study, DP was detected in all foodstuffs except onion. This result shows the wide-spread exposure of DP in the environment of Korea. (Kim et al., 2014). "	
Republic of Korea	18	91	Comment to "Levels of ΣDP observed were lower in serum from Canada, France, Republic of Korea and Norway compared to occupationally exposed people in China with median of 2.39, 1.20, 0.75, 1.3 and 42.6 ng/g lw, respectively (Zhou et al., 2014; Brasseur et al., 2014; Kim et al., 2016; Cequier et al., 2015; Ren et al., 2009)." *Please use the official name of my country. Based on this reference, the concentration was miswritten. So, NIER corrected the concentration as same as the reference indicates.*	Sentence was amended as suggested.
UK	General		Thank you for the updated Risk Profile and RCOM	
UK	General		To follow up on one response in the RCOM: Study descriptions need to ensure that the reliability and robustness of the data are clear and that the there is sufficient detail available in the document. Study descriptions should therefore not be limited by an arbitrary page limit to allow a weight of evidence assessment to be performed.	Information acknowledged; however, we do have quite strict page limits so complete description of details from studies are not possible to include in the risk profile. Studies included are peer-reviewed and most are also open access literature.
UK		1 - 11	Generally we have not commented on the executive summary, with the expectation that this will be updated in line with the main text.	Executive summary has been updated in line with the main text and shortened.
UK		10	Typos: *exiding* should be "exceeding", *carisinogenic* should be "carcinogenic".	Corrected.
UK		10	*However, DP show structural similarities with already listed POPs such as aldrin,*	The last part of the sentence was deleted.

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			chlordane, heptachlor, mirex, chlordecon which have neurotoxic and some also carisinogenic properties. These listed substances are organochlorine insecticides and are indeed neurotoxic, but dechlorane plus has shown no evidence of neurotoxicity in the available toxicology studies which, although short term, have tested high doses.	
UK		10	*However, DP show structural similarities with already listed POPs such as aldrin, chlordane, heptachlor* As discussed in the ECHA SVHC dossier, while the chlorinated norbornene is common, the overall structure of DP is much larger as it contains two of these groups rather than one, with consequent differences in physicochemical properties compared to say *aldrin, chlordane, heptachlor, chlordane etc.* The dossier also discusses the differences in functional groups between DP and potential analogues. The analogues were considered suitable for the persistence assessment, but not appropriate/suitable for "direct read-across of bioaccumulation and (eco)toxicity end points". Mirex was not considered to be a close analogue. With respect to ecotoxicity endpoints, if you wish to make a case that the adverse effects seen for aldrin, chlordane, heptachlor etc. are expected for Dechlorane Plus, this read-across needs to be made using data, for example assessing whether equivalent tests available for Dechlorane Plus that exist for the already listed POPs show the same level of effects. It would be helpful to also include the relevant physicochemical data and molecular size information for parent DP (i.e. building on what you have provided for the mono-adducts in table 11 of the INF document) – the ECHA SVHC dossier provides a summary table.	A Table including relevant physicochemical data and molecular size information for parent DP, and structural similar compounds will be included in the INF-document. Paragraph has also been amended due to several comments.
UK		15	Paragraph 70 has more information about the syn/anti ratios from both manufacturers – please consider adding that information into paragraph 15 as it is relevant for a number of studies prior to paragraph 70.	Some more information was added.

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UK		18	Please consider some re-phrasing as the properties listed as having been modelled are more than physico-chemical ones.	It is a bit unclear to us what you want to add, we added long range transport which was also modelled based on QSAR.
UK		28	Since the substance is currently in production, we suggest contacting the known manufacturers to understand current supplies.	Comment noted, we are in the process of collecting further information on production and use.
UK		48	Thank you for adding the depuration half-lives, but as per our previous comment, please provide more information about the Wang et al 2019 test. •Test concentration(s) used in the study •What constituted the "laboratory-scale microcosm" (I can only access an abstract) •Whether a solvent was used •Details of the chemical analysis used, frequency of measurement and values measured in water and fish •How the BCF values were calculated (e.g. kinetic, steady state) •Whether steady state occurred It was also unclear why Kliminsch scores cannot be provided, when these are an internationally recognised way of indicating study reliability.	We can unfortunate not include all details from the study design into the riskprofile due to page limits. However some more details were added. Some details from the material and methods of this article which was not included in the risk profile: **Laboratory-scale equilibration solution of DP** A rectangular glass aquarium (120 cm in length, 50 cm in width, and 50 cm in height) was used to build the laboratory-scale equilibration solution of DP (Figure SI-1). Air stones were placed in the quarium to maintain oxygen saturation in the water. One gram of commercial DP (≥ 99% purity, in power) was enclosed with two layers of pre-cleaned filter paper and filter screen (1000 mesh), respectively. The DP package was loaded in a hollow steel ball so that the fish could not directly contact the DP powder. Four DP packages were placed in the bottoms of the rectangular glass aquarium (Figure SI-1). DP will enter into to the dissolving phase of water by passive diffusion, until attained steady state. When the DP concentration in dissolving phase of water decreased by volatilization, degradation, and adsorption to suspended particulate matter, as well as bioaccumulation and metabolism by fish, DP powers in the package would dissolve again until equilibration. Therefore, this system comprises continuous levels exposure (chronic) of aquatic organisms in a temperature- and light-controlled room. Fish collection and treatment Common carp (Cyprinus carpio) were purchased from a local aquatic farm, with average body length and weight of 9.78 ± 1.19 cm and 26.0 ± 8.94 g, respectively. Both experimental and

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				control fish were kept in de-chlorine water with temperature, PH, dissolved oxygen, and hardness at 20 ± 0.97, 7.3 ± 0.35, > 5 mg/L, and 103 ± 0.2 mg/L as CaCO3, respectively. Air flow was constant, a daily 12-/12-h light/dark photoperiod cycle was used throughout the experiment. The fish were acclimatized in the laboratory for 2 weeks before the experiment, with the mortality of fish near to zero. Experiments were conducted in five rectangular glass aquariums with 300 L capacity. One was for the control test, and the other four were divided into two groups: two were for fish exposure (DP packages in them) and the remaining two for fish depuration experiment. **Exposure** Fifty fishes were reared in an aquarium with equilibration solution of DP. Our preliminary experiment showed that DP in dissolved phase would reach saturation in three days, and kept equilibrium state by the following time. Fish feces were removed by net daily and all fish were moved to another aquarium (fresh water with DP exposure at least three days) every four days in order to improve the living environment and conditions. Three fish were randomly sampled on Day 1, 2, 3, 4, 6, 8, 10, 16, and 32. Besides, 1 L of water was collected to determine the concentrations of DP in dissolved phases every day. The bioconcentration factors (BCFs) were calculated from the ratio of the uptake rate constant elimination rate constant (Arnot and Gobas 2006; Baussant et al. 2001)
UK		49	*Furthermore, model calculation of the oral up-take of DP showed great agreement between modelling (Larisch and Goss, 2018) and experimental data (Tomy et al., 2008) indicating that up-take of super-hydrophobic chemicals like DP from food does take place without any anomalies. Uptake of DP is slow but will eventually result in substantial bioconcentration when substances are not metabolized (Larisch and Goss, 2018).*	This text has been revised as suggested.

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			Please consider re-phrasing this sentence for clarity. Since the earlier part of the paragraph discusses depuration, we also suggest making this sentence a new paragraph. Suggested rephrasing: Furthermore, a comparison of modelled *(Larisch and Goss, 2018)* and measured *(Tomy et al., 2008)* oral uptake in fish [NB: we assume that *Larisch and Goss, 2018* data were for fish?] showed good agreement [between uptake rate constants?], indicating that bioaccumulation of DP via food can be reliably predicted. Uptake of DP is slow but will eventually result in substantial bioconcentration ~~when~~ as the substances ~~are~~ is not metabolized (Larisch and Goss, 2018).	
UK		52	Please add the reason why Li *et al.* (2013b) felt it could not be excluded, that the lower congeners might have been present in the commercial product (rather than presumably photo-degraded).	Comment noted, this sentence has been revised due to other comments. Further elaborations about the authors speculations seems unnecessary.
UK		52	Please check the references to the different Li studies in this paragraph. Based on the references in the Risk Profile: Li *et al.* 2013a used Quail, Li *et al.* 2013b used rats, and Li *et al.* (2014) used wild frogs (where lower congeners were detected).	Reference has been corrected to Zheng et al., 2014a.
UK	13	68 - 69	There is some overlap between these paragraphs for the bird biovector issue. Please consider merging the discussion of Evenset *et al.* 2007 into one place. In addition the issue for Vorkamp et al (2018) is not related to guano finding, but migration, so it would be better placed before or after the guano science. Suggested moved / edited text below: Birds have previously been identified biovectors for the transport and deposition of POPs to ecosystems in remote regions through deposition of guano, feather loss and decaying carcasses (Evenset et al., 2007) and may represent an additional	Text was edited and shortened as suggested.

Source of Comment	Page	Para	Comments on the second draft of the risk profile on Dechlorane Plus and its isomers	Response
			transport pathway for DP to remote regions. In Ellasjøen at Svalbard, seabird guano was found to account for approximately 14% of the POPs contaminant inventory of the lake catchment area, approximately 80% of the POPs contaminant inventory of the lake itself and was found to be approximately thirty times more efficient as a contaminant transport pathway for POPs compared to atmospheric long-range transport (Evenset et al., 2007). In a study by Desjardins et al. (2019), DP and other halogenated flame retardants were detected in guano of urban-adapted ring-billed gulls from a colony on Deslauriers Island near Montreal, Canada, and were similarly to the findings from Ellasjøen at Svalbard postulated to contribute to the augment exposure locally (Desjardins et al., 2019). In this study, the total amount of halogenated flame retardants deposited by the entire ring-billed gull colony (64,980 gulls, both sexes combined) through guano was estimated to 1 g during a 28-day period. In a study on DP in birds in remote regions, Vorkamp *et al.* (2018) detected DP in peregrine falcon eggs collected in Kujalleq in South-Greenland in the low Arctic. Greenland peregrine falcons are migratory birds that spend the northern hemisphere winter in the Caribbean and South America. Thus, the DP in their eggs ~~likely~~ could reflect exposure both experienced at wintering and breeding grounds as well as during migration~~. This finding suggests migratory birds as possible biovectors for long-range transport of DP. It is however not possible to quantify the input of DP to remote regions via this transport pathway from the limited available literature. However, earlier studies suggest that input via migrating birds in some instances may be considerable and can contribute to augmentet levels locally.~~	
UK	13	71	*The authors* [Gao *et al.* (2018] *suggest that the findings are consistent with DP being brought to the Fildes Peninsula in*	Accepted. Text has been amended to more clearly reflect the authors conclusions and whether their

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			Antarctica by long-range atmospheric transport. Please add the authors' reasoning for LR atmospheric transport (for example is it consistent with the Moller *et al.* (2010)'s postulation that you cite at the start of para 70?). A short general paragraph would be helpful to draw a conclusion about how far it is possible to interpret the ratio of anti and syn as a mechanism to interpret the local or LRT source of the chemical.	conclusions are consistent with Moller et al. (2010)'s postulation.
UK	16	84	*"There was a significant difference in the doubling times."* Please consider using a different term to "doubling time" as it isn't fully clear what this means.	Text has been changed to clarify what is intended by doubling time.
UK	16	84	5th line states "shorter than reported for other flame retardants in the study" Please include mention of what the other flame retardants included in the study were.	The requested information was added to the text.
UK	16	86	*In the same study the authors also report a higher BDE-209/ DP ratio in black kites in 1999 than in 2011. Although the difference was not significant, it suggests a decrease in BDE-209 levels relative to DP possibly reflecting a shift in the use of these flame retardants.* If the difference was not statistically significant, we suggest deleting these sentences, as no conclusions can reliably be drawn or inferred.	The text was deleted as suggested.
UK	16	87	*The increasing concentrations of the replacement flame retardants and the reduced levels of the PBDEs may be indicating the shift away from the use of PBDEs to alternative flame retardants in this urban area.* Please consider rephrasing: The increasing concentrations of the replacement flame retardants and the reduced levels of the PBDEs could be a consequence of regulatory risk management of the use of PBDEs as flame retardants ~~may be indicating the shift away from the use of PBDEs to alternative flame retardants in this urban area~~.	Suggested amendment was not accepted as this are the authors own words. The text has been edited to more clearly indicate that this is a direct quote from the paper.

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UK		89	*The atmospheric concentration (11 pg/m^3) in Osaka city was comparable to that reported for urban areas in China despite no DP manufactoring facilities in Japan.* Suggest rephrasing for clarity: The atmospheric concentration (11 pg/m^3) in Osaka city was comparable to that reported for urban areas in China, despite there being no known production of ~~no~~ DP ~~manufactoring facilities~~ in Japan.	Sentence has been rewritten due to several comments.
UK		98	For both Gong et al studies, please indicate whether algal growth was significantly affected?	Algal growth was not one of the parameters measured. No change made to the text.
UK		98	The ECHA SVHC dossier (appendix) states the following for Gong et al (2013) – based on the abstract: *At 72 hours the ROS generation in the exposed cells was similar to that in the control cells. Overall, Gong et al. (2013) [ABST] concluded that the results indicated that Dechlorane Plus showed a low toxicity and had marginal effects at concentrations up to 1 351 ng/L. The concentrations tested in this study are well in excess of the water solubility of the substance.* Please add this text to the Risk Profile.	Some of the information has been added.
UK		98	For Gong et al (2018), all concentrations appear to be above the water solubility. Please indicate how this was taken account of in the study, for example the extent to which undissolved material could have impacted the test.	No amendments made to the text. The samples were washed before preparation for the different analysis to avoid undissolved material from impacting the test.
UK		99	Based on the abstract summarising the results of Gagné et al (2017), please add the following text: Following DP exposure, no histopathological lesion was found in gonads, and no change in hemocyte DNA strand breakage, phagocytosis rate, and viability was observed.	Accepted.
UK		101	Noyes et al (2015). It is important to recognise the effects observed for Dechlorane Plus compared to the other substances tested in the same study, and that the effects of DP occurred at concentrations significantly above its water solubility. Please add: "...(which was several orders	Comment noted, no change made to the text.

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			of magnitude higher than the solubility limit in pure water). The level of response was much lower than phosphate ester and chlorinated phosphate ester flame retardants in the same test system. (taken from the ECHA SVHC dossier appendix)	
UK		101	The appendix to the ECHA SVHC dossier considers the effects neurobehaviorial effects (available at that time) in more detail. The discussion from that document is copied below: *It is not clear how closely the available Zebrafish embryo tests followed OECD TG 236 or whether the relevant validity criteria were met and so their reliability is uncertain. For example, the Chen et al. (2017) study used a slightly higher temperature than the OECD recommendation, did not provide information on water quality (e.g. dissolved oxygen concentration or hardness) and there is no mention of a positive control. However, control mortality and hatching rate were satisfactory (measured at 120 hpf rather than the recommended 96 hpf) and a higher number of fish per treatment were used than required by the OECD TG (apparently n=120 fish per treatment).* *The standard fish embryo toxicity test is considered to be a short-term acute test, with hatch/mortality/malformation end points only. Neither the Noyes et al. (2015), Kang et al. (2016) nor Chen et al. (2017) studies detected significant effects for these endpoints. Whilst the observed developmental neurobehavioral effects in the Noyes et al. (2015) and Chen et al. (2017) studies may possibly indicate an adverse response (cyclodiene insecticides such as chlordane – which are analogues of Dechlorane Plus – are generally considered to be neurotoxic to terrestrial organisms), it is difficult to determine how they relate to population level apical effects. Ideally, the degree and timings of the changes would be compared to reliable results obtained in the same test system for known neurotoxicants, so that an adverse outcome pathway could be developed. Noyes et al. (2015) detected a significant neurobehavioural effect at a very high*	Comment noted. A small correction to the comment; the highest nominal concentration of DP used in Noyes et al. (2015) was 6.4 μM (~4.18 mg/L). Suggested text was not included. Several independent research groups have described various effects from DP exposure to the brain, motor-neurons, gene expression related to the neuro-system. Although OECD TG has not been used, test-setup had appropriate control, design and was well described. Based on the weight of evidence, the studies point to some effects on the neuro-system and brain tissue. Furthermore, a paragraph discussing the water solubility of DP has been included in the section of "toxicity to aquatic organisms" to put these studies in perspective.

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			nominal test concentration (ca. 40 mg/L), but the level of response was lower than other substances that are suspected of having a neurotoxic mode of action. Similarly, Chen et al. (2017) noted that the significantly elevated frequency of spontaneous movement induced by Dechlorane Plus at 24 hpf was different to that observed for two other substances in apparently similar test systems[40]. Chen et al. (2017) also noted that external factors such as temperature can affect spontaneous movement of Zebrafish embryos. *In the absence of a standardised method for such end points and reliable benchmarking against other substances, these studies raise a potential concern for fish but do not demonstrate an effect equivalent to the level of concern associated with the Annex XIII T criterion, particularly as the main effects were observed at or above 30 µg/L (nominal) (i.e. the NOEC from would seem to be >0.01 mg/L). It should also be noted that the concentrations used in the aqueous studies were all well in excess of the reported water solubility of Dechlorane Plus and so the significance of the effects is unclear.* *[40] 2,2',4,4'-Tetrabromodiphenyl ether (BDE-47) significantly increased the frequency of spontaneous movement from 20 to 23 hpf at 20 µmol/L [about 10 mg/L], whereas bisphenol-A significant decreased the frequency of spontaneous movement from 25 to 29 hpf at 15 mmol/L [3.4 g/L]. These are much higher concentrations than the reported water solubility of these substances cited in existing EU* *regulatory reports (around 11 µg/L and 300 mg/L, respectively) so these data might not be reliable.* The summary of the discussion in the main ECHA SVHC dossier (p67) states: *Recent non-standard studies with adult and embryo/larval Zebrafish suggest that Dechlorane Plus has biological activity and can induce effects such as oxidative*	

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			stress, thyroid hormone-related gene up-regulation and neurobehavioural changes (Hang et al., 2013 [ABST]; Noyes et al., 2015; Kang et al., 2016; Chen et al., 2017). However, the reliability of the findings is uncertain, their links to population-relevant adverse apical effects is unknown, and benchmarking with other substances would be beneficial (where this has been done, the level of response seems lower for Dechlorane Plus than (chlorinated) phosphate esters). In general, the NOEC from these studies appears to be above 0.01 mg/L (for aqueous exposures), i.e. above the T criterion (and also significantly above the solubility limit in pure water). On this basis, we suggest that the Risk Profile text should similarly acknowledge the uncertainties. We suggest adding: <u>However, the reliability of the findings is uncertain, their links to population-relevant adverse apical effects is unknown, and benchmarking with other substances would be beneficial (where this has been done, the level of response seems lower for Dechlorane Plus than (chlorinated) phosphate esters).</u>	
UK		102	Chen el al (2019). The test concentration of DP is stated to be 60µg/L. As this is considerably in excess of the DP water solubility, please indicate how bioaccumulation was measured – for example is it clear whether the measured body burden reflects material absorbed to the exterior of the fish or only uptake internally? If the paper does not provide this information, please state this in the risk profile text.	Comment noted, but no amendments were done to the text. Since bioaccumulation should reflect internal dose, fish were rinsed 3 times in water before analysis and method seems valid. The study is also open peer-reviewed literature and thus accessible to those interested in study details.
UK		102	Chen et al (2019). We have similar reservations to those expressed for the tests summarised in paragraph 101. We suggest adding the following text: <u>The limited number of test concentrations used in the study, and the single concentration of DP used being significantly in excess of its water solubility mean the reliability of the findings are uncertain. It is also unclear how the observations link to population-relevant adverse apical effects. It is very difficult to benchmark the effects compared to other chemicals to put these results in context and understand their</u>	Comment noted, no changes made to the text. The study is open peer-reviewed literature and thus accessible to those interested in study details.

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			significance.	
UK	21	107	Yang *et al.* (2014) & Zhang et al., 2014. Please add: no significant changes in body weight were seen.	Information was added.
UK	21	107	Yang *et al.* (2014) - The ECHA SVHC dossier states: *...The overall NOEC for these biomarker effects would be <0.1 mg/kg dw. Whilst they may suggest some potential for adverse apical effects, without clear mechanistic links, the true impact of these observations on earthworm populations remains uncertain. If there had been measurements of effects on earthworm feeding, behaviour and movement, as normally undertaken under OECD TG 222, the importance of changes such as reductions in AchE activity might have been more apparent.* This text is more nuanced than the statement in the Risk Profile. Please consider revising the current Risk Profile text to reflect this.	Comment noted. Biomarker was added to indicate what the NOEC referred to.
UK	21	110	Li et al (2013a). Please add: *A NOAEL was not derived by the study authors, but no mortality or change in body or liver weight was seen following 90 days' exposure up to 100 mg/kg bw/d. No other sub-chronic toxicity parameters were recorded.*	A shorter sentence was inserted to cover the information: Mortality, body and liver weight was not altered in any exposure groups.
UK		111	Typo: …*liver* Impairment...	Thank you, corrected.
UK		113	*No adverse health effects were observed in any of the identified repeated-dose oral toxicity studies, testing dose levels up to 5000 mg/kg-bw/day (as summarized in ECHA, 2017b,c; Canada 2019, OxyChem 2004b).* Please indicate the duration of these studies	Duration of these experiments were added as well as some amendments.
UK		113	*...there are no long-term studies exceeding 90 days, which might be important given the apparently slow uptake of the substance.* We suggest amending the wording: …there are no long-term studies exceeding 90 days, which might be important given the ~~apparently slow uptake~~ long elimination half-life of elimination of the substance.	The study of Brock et al. 2010 report also an old study with radiolabelled DP that indicate slow uptake, so slow uptake was kept but long elimination-half-life was added since both describes properties of DP justifying importance of chronic exposure studies.

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UK		113	*such that the high doses might not truly reflect the degree of exposure of the organisms* It should be noted, however, that the administered dose in the 28-day study (5000 mg/kg bw/d) was extremely high (5 times the limit dose of the OECD test guideline)	Amendment made to the statement
UK		113	*Further toxicity testing has been required by ECHA following a compliance check on the REACH registration dossier. The deadline for the registrant to provide these data is 21/12/2020 (ECHA website).* We suggest that it would be preferable to wait for the outcome of these tests.	Comment noted.
UK		114	Wu et al (2012) Please add: The study had some deficiencies compared with the OECD 408 guideline: small group sizes (7/dose), maximum dose of 100 mg/kg bw/d (ten-fold lower than the limit dose), poor reporting of investigations, limited investigations. Even at the very high doses administered, systemic toxicity was not evident.	Not accepted.
UK		114	Wu et al (2012) *Relative liver weight was significantly increased in the 2000 mg/kg group* Please clarify if they were also increased in the 5000 mg/kg bw/d groups, or state if the finding was not dose-related.	Information added.
UK		115	Li *et al.*, 2013b Please add: Although some oxidative stress responses and alteration of gene expression were observed, these did not translate to health effects. Health Canada therefore concluded that the physiological changes were not adverse.	Some amendment made to the text to reflect this.
UK		117	*A significant increase in absolute and relative ovary weight was observed at 1500 mg/kg groupe, and a significant increase in absolute and relative thyroid/parathyroid weight was observed in females in the 750 mg/kg groupe treated for 28 days in the toxicity phase.* Please state whether these findings were dose-related, or isolated findings at the stated doses? It is stated that the NOEL is 5000 mg/kg bw/d, so clarification is required, which should include the magnitude of the changes.	Some amendments made to the text to reflect this.

Source of Comment	Page	Para	Comments on the second draft of the risk profile on Dechlorane Plus and its isomers	Response
UK		121	Typo: …as in source retgions.	Corrected.
UK		121	*Furthermore, DP is currently a high production volume chemical that is marketed as a replacement for already regulated flame retardants* Suggest to reword: Furthermore, DP is currently a high production volume chemical that is marketed as a replacement for ~~already regulated~~ flame retardants that are already regulated by the Stockholm Convention.	Sentence has been removed due to other comments.
UK		124	*Adding to the concern for adverse effects is the lack of toxicity information on DP by-products such as 1,3- or 1,5-Dechlorane Plus monoadduct (DPMA) that in some cases is detected in greater levels than DP in environmental samples (Sverko et al., 2011; Tomy et al., 2013; Guerra et al., 2011), and the structural similarity of DP to already listed substances such as aldrin, mirex, and chlordecone.* The main concern for the mono-adducts is their structural analogy to the chlorinated POPs. As shown in table 11 of the INF document, the analogy is much closer for DMPA (in terms of physico-chemical properties and molecular size) than to parent Dechlorane Plus. We suggest rephrasing this text: Adding to the concern for adverse effects ~~is the lack of toxicity information on~~ are the DP by-products such as 1,3- or 1,5-Dechlorane Plus monoadduct (DPMA) which have structural similarities to ~~already listed~~ substances such as aldrin, ~~mirex,~~ and ~~chlordecone~~ heptachlor that are already regulated by the Stockholm Convention (table 11, INFxx). ~~that~~ There are no toxicity data for these monoadducts, but in some cases, these are ~~is~~ detected in greater levels than DP in environmental samples (Sverko et al., 2011; Tomy et al., 2013; Guerra et al., 2011). ~~and the structural similarity of DP to already listed substances such as aldrin, mirex, and chlordecone.~~	Text has been revised as suggested.
UK		124	*Furthermore, mixture toxicity effects that could increase DP toxicity and bioaccumulation and visa versa for other*	Comment noted, sentence has been edited as suggested.

Source of Comment	Page	Para	Comments on the second draft of the risk profile on Dechlorane Plus and its isomers	Response
			pollutants have been indicated (Chen et al., 2019). The authors appear to attribute the combined effect to bioaccumulation. From the paper, "we speculate that the synergistic effects on motor deficits observed in zebrafish co-exposed with DP and 3-MP are most likely due to higher actual exposure concentrations of 3-MP and DP that resulted from elevated bioaccumulation in the co-exposure." We suggest to revise the text as Furthermore, the authors of a study in zebra fish indicated that other pollutants may increase bioaccumulation, resulting in greater toxicity, and vice versa (Chen et al., 2019). As noted above, we remain cautious about the limitations of the study, and therefore the extent to which more general conclusions about mixture toxicity effects of DP can be drawn.	
UK		Table 5	*Neurotoxicity as observed in zebrafish* As we have commented above, we have doubts that the data are sufficient to make such a statement.	Reduced axonal growth is a kind of neurotoxicity. The word "indications" was added to the text
UK		Table 5	*Neurotoxicity as observed in zebrafish* In paragraphs 101 and 102, the effects are referred to as "neurobehaviorial" but in the table they are referred to as "neurotoxic". Please amend in the table to wording to "neurobehaviorial".	Neurotoxicity is linked to the two Li studies in carp.
UK		Table 5	*Potential for endocrine modulating effects as observed in zebrafish (Kang et al. 2016)* It is questionable whether this should be listed as a key adverse effect if the significance and consequence of the gene and T4 changes observed are not known from the study	Comment noted. However, this uncertainty is indicated in text where we use the word "potential" about these effects. Furthermore, these effects may not be key adverse effect for the adult fish but may be involved in the underlying mechanisms leading to the growth reduction of motor-neurons observed in the developing fish. So, although not strong evidence for adverse effects in itself, in the concept of Stockholm Convention and in light of the precautionary approach these effects could be indications for possible adverse effects.
UK		Table 5	*Potential for endocrine modulating effects as observed… and humans… Peshdary et al., 2019).*	Sentence has been amended.

Source of Comment	Page	Para	Comments on the second draft of the risk profile on Dechlorane Plus and its isomers	Response
			Please amend this point as Peshdary *et al.* (2019) was an *in vitro* study.	
UK		Table 5	*Immunemodulating effects as observed in carp (Li et al., 2019b)* According the study description in the text, these were based on *altered expression of immune regulating genes in the brain and liver*. It is questionable whether gene changes can be included as one of the key adverse effects if the significance of the change (i.e. whether adverse effects result) does not appear to be known from the study.	Comment noted, wording was modified. However, this is the only study and there are no other studies that has included such endpoints, so this could potentially be one of the adverse effects.
UK		Table 5	*Oxidative stress* (environmental) We question whether oxidative stress in itself can be used as evidence of adverse effects	Oxidative stress is something that the organism has mechanisms to combat, however the balance between reactive oxygen species and antioxidant defence and repair systems is fine-tuned, and if antioxidant defence systems are overwhelmed irreparable damage may occur e.g. by oxidative damages and effects in intracellular signalling. Furthermore, the organism use energy to counteract the effects caused by oxidative stress. In the environment this energy use add to the burden in situations with multiple stressors and could thus lead to adverse effects.
UK		Table 5	*Oxidative stress*. Wu et al 2012. It is questionable if this study should be used to support the occurrence of adverse effects when it had a number of deficiencies and there was no evidence of systemic toxicity.	Comment noted. Our intention is to point out that oxidative stress has been shown in many different organisms. In situations with multiple stressors in the environment this stress might have impact on survival.
UK		129	*The concern for adverse effects furthermore relates to observed effects on the liver, endocrine modulating effects, in particular to thyroid hormone system and PPAR to both human health...* Adverse effects relevant to human health have not been observed in the available data.	Comment noted.
UK		130	*Mixture toxicity effects such as increased toxicity and bioaccumulation have been indicated for DP.* Based on our points above, we suggest that this sentence should not be in the conclusion.	Comment noted, however this may be an important effect in the environment.
UK		130	*Furthermore, the combined effect of climate change and other environmental stressors adds to the risk posed by environmental pollutants by affecting the*	Not accepted. As indicated in the peer-reviewed literature and AMAP reports climate change may increase the risk for adverse effects in Arctic organisms. Although these are general findings,

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			vulnerability and adaptability of organisms as shown for Arctic organisms. While this is a general concern, it does not appear to be specific to Dechlorane Plus, and we suggest the text should not be part of the conclusion for whether the substance is a POP.	they are nonetheless directly relevant to the consideration of whether global action is be warranted for DP.
UK		INF doc., p24	Please consider also including molecular structures and modelled physicochemical data for the two detected low congeners	Comment noted we will try to include that.
ACAT/ICC /IPEN	3	4	Please amend as suggested: " Anpon Electrochemical Co. manufacturing plant in Huai'an in Jiangsu Province, China. Production in the United States started in ~~1986~~ the 1960s	Accepted.
ACAT/ICC /IPEN	3	5	Please amend as suggested: "~~Releases from use include industrial use as well as releases from consumer products~~. DP is also released from industrial uses as well as from consumer products	Text has been amended.
ACAT/ICC /IPEN	4	13	Please insert: ".., when mirex production at Hooker Chemical in Niagara Falls, US, shifted to DP production and norbornene derivatives of similar structure" Shen L, Reiner EJ, Helm PA, Marvin CH, Hill B, Zhang X, Macpherson KA, Kolic TM, Tomy GT, Brindle ID (2011). Historic trends of dechloranes 602, 603, 604, dechlorane plus and other norbornene derivatives and their bioaccumulation potential in Lake Ontario. Environ Sci Technol. 45(8):3333-40	We added the reference but due to the page restriction and the content of the suggested sentence the text was not included.
ACAT/ICC /IPEN	4	14	Please insert: " DP has been used as a replacement flame retardant substance for decabromodiphenyl ether (decaBDE) and mirex (Hoh et al., 2006)."	Not accepted as the text in this paragraph has been shortened and the suggested information is included in paragraph 30 in section 2.1.2 Uses.
ACAT/ICC /IPEN	6	17	Please insert: "Continued DP production may therefore result in the formation and release of additional POPs chemicals and other toxic substances."	Not accepted at this section is intended to provide information chemical identity.
ACAT/ICC /IPEN	6	18	Please insert: "DP is structurally similar to substances already listed in the Stockholm Convention such as aldrin, mirex, and chlordecone." **UNEP**/POPS/POPRC.15/3	Accepted.
ACAT/ICC /IPEN	6	20	International ~~POPs~~ Pollutants Elimination Network - *This is now IPENs registered name.*	Wording has been amended.
ACAT/ICC /IPEN	7	28	Comment to Qiu et al., 2007: - *The risk profile should include more recent production data to assess possible increasing trends of production and use as a result of restrictions on decaBDE*	Comment noted. We use available information from peer-reviewed and grey literature. Hopefully new information on production and use will be come available in the POPRC

Source of Comment	Page	Para	Comments on the second draft of the risk profile on Dechlorane Plus and its isomers	Response
				process and the ongoing call for evidence under REACH in the EU.
ACAT/ICC /IPEN	7	28	Please amend sentence as suggested: "Furthermore, manufacturing in China has been reported to be 300–1000 tonnes per year by Anpon Electrochemical Co., a subsidiary of ChemChina, in Huai'an, Jiangsu Province, since 2003 (Wang et al., 2010a)."	Text was amended in response to comment.
ACAT/ICC /IPEN	8	30	Please insert: "..., who incorporate it into polymers used in consumer products. Intended customers are not clear for DP manufactured by Anpon Electrochemical Co."	Not accepted.
ACAT/ICC /IPEN	8	34	Please amend as suggested: "PyroVex® SG is an additive flame-retardant product that, according to the Material Safety Data Sheet of the supplier Velsicol Chemicals LLC, it contains > 99% DP (Velsicol Chemicals LLC, [HYPERLINK "https://www.velsicol.com/products/pyrovex-flame-retardants"], accessed 06.02.2020).	Accepted with some modifications
ACAT/ICC /IPEN	10	50	Please insert: " In a study of biomagnification of DP in a freshwater reservoir in the vicinity of an electronic recycling facility in South China, the trophic magnification potentials of the DP isomers were found to be 2-3 times greater than those of PBDE congeners and comparable to or lower than those of the highly recalcitrant PCB congeners in the same food web (Wu et al. 2010)."	Accepted.
ACAT/ICC /IPEN	10	52	Macrophyte?	Macroalgae was inserted.
ACAT/ICC /IPEN	11	58	Rewrite " The high transfer efficiency calculated indicates that DP may be deposited to some degree in remote regions." to "The calculated high transfer efficiency predicts that DP will be deposited in remote regions."	Text has been edited in response to this and other comments.
ACAT/ICC /IPEN	12	61	Please include Morris et al 2017	The was not included as the provided information "Morris et a. 2017" did not allow us to identify, retrieve and consider the mentioned publication.
ACAT/ICC /IPEN	13	70	Suggest to rewrite sentence to. "These findings were considered indicative by the authors of long-range transport as a source to the DP detected in the study, however, the authors state that contribution from local sources cannot be excluded."	Sentence has been edited in response to this and other comments.

Source of Comment	Page	Para	Comments on the second draft of the risk profile on Dechlorane Plus and its isomers	Response
ACAT/ICC /IPEN	14	72	Suggests that the following text is added in this paragraph: "In a study of eels (*Anguilla anguilla*) sampled from five Latvian lakes, eight dechlorane-related compounds (DRCs) were analyzed. The study found that "the mean total concentration of DRCs ($\sum_{DRC}$) in the samples was 0.62 ng g^{-1} l.w. and the geographical distribution of DRC contamination was nearly uniform among the selected lakes. Dechlorane 602 (Dec 602) was the predominant component, whereas the composition of mixtures containing syn- and anti-Dechlorane Plus (DP) stereoisomers showed a pronounced enrichment of the anti-DP isomer and was close to the composition of OxyChem® DP commercial product," thus indicating the release of DP from disposal of consumer products as the probable source (Zacs et al. 2018). In Canada, DP isomers were found to be particularly abundant in urban-feeding ring-billed gulls (anti-DP detected in 100% and syn-DP in 93% of livers), with sumDP hepatic mean levels reaching 230 ng/g lw (Gentes et al. 2012). "	Accepted. The suggested studies were included in the text.
ACAT/ICC /IPEN	14	73	Add Anpon Electrochemical Co to the sentence "The soil concentration of DP near the Anpon Electrochemical Co production facility in China was 1200 ng/g and the amount decreased by an order of magnitude within 7.5 km (Wang et al., 2010c)."	Text was edited to include the requested information.
ACAT/ICC /IPEN	14	73	At the end of this para add: " DP, mirex and other norbornene derivatives were found in Niagara River suspended sediment samples near the OxyChem manufacturing facility in the US. Examination of sediments collected between 1980 and 2006 showed no decline of mirex until the late 1990s and a declining trend for DP."	Accepted. The description of the suggested study was included in the text.
ACAT/ICC /IPEN	16	81	At the beginning of this paragraph please add " In a study of avian species of King George Island, Antarctica, Kim et al. (2015) measured levels of DP in Gentoo penguin (*Pygoscelis papua*), the Adelie penguin (*Pygoscelis adeliae*), the South Polar skua (*Stercorarius maccormicki*), and the Brown skua (*Stercorarius antarcticus*), and found levels of dechloranes ranging from 0.60-1.30 ng/g-lipid in the penguin samples and 6.57-47.4 ng/g-lipid in the skua samples. The study demonstrated long-range transport and biomagnification of HBCDs, Dechloranes, and polychlorinated napthalenes.	Information on the Kim et al. 2015 study was included in the section on long-range environmental transport and DP levels in the Antarctic.

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ACAT/ICC /IPEN	12	82	After para 82 Please add " Brazeau et al. (2018) document that DP derivatives have been found worldwide in air, sediments, sewage sludge, seawater, biota, human serum, hair, placental tissue, breast milk, and dust. And they note that research demonstrates that some POPs degradation products are more toxic than the parent compound, as with hydrodechlorinated analogues of such POPs as aldrin and mirex. This study identified six new and environmentally relevant DP degradates, showing that "hydrodechlorination of the of the geminal chlorides on the methylene bridge of DP" as a major degradation route in sediments. The authors highlight the importance of identifying these DP degradation products in "monitoring the fate of this ubiquitous chemical in the environment."	Not accepted. This information is already provided in the risk profile.
ACAT/ICC /IPEN	17	87	Please insert: " In Republic of Korea, DP was detected in almost all samples of indoor dust from homes (0.30 – 530 ng/g; median 9.1 ng/g), offices (3.7 – 100 ng/g; median 35 ng/g), and daycare centers (6.2 – 56 ng/g; median 12/ng/g) (Lee et al., 2020). Air sampling in 15 homes in India found DP levels ranging from 0.2 to 5.43 pg/m3 (median 2.81 pg/m3) and 0.52–62.7 pg/m3 (median 1.62 pg/m3) for urban and suburban sites, respectively Yadav et al., 2020)." Lee HK, Kang H, Lee S, Kim S, Choi K, Moon HB (2020) Human exposure to legacy and emerging flame retardants in indoor dust: A multiple-exposure assessment of PBDEs, Sci Total Environ 719: 137386 Yadav IC, Devi NL, Kumar A, Li J, Zhang G (2020) Airborne brominated, chlorinated and organophosphate ester flame retardants inside the buildings of the Indian state of Bihar: Exploration of source and human exposure, Ecotoxicol Environ Saf 191:110212	Accepted, this information will be included in the INF-document.
ACAT/ICC /IPEN	19	89	Please insert " DP showed significant uptake in peanut plants grown in a field located in an e-waste recycling area in China, resulting in 6.2 ng/g DP, enriched with syn-DP (Fan et al., 2020)". Fan Y, Chen SJ, Li QQ, Zeng Y, Uan X, Mai BX (2020) Uptake of halogenated organic compounds (HOCs) into peanut and corn during the whole life cycle grown	Not accepted since this type of info is already indicated in the text.

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			in an agricultural field, Environ Pollut 263:114400	
ACAT/ICC /IPEN	19	91	Please insert: "A study of 15 occupationally exposed workers at e-waste recycling sites in Bangladesh found a median DP exposure of 2.3 ng/h/silicone wristband, approximately 130 times higher than non-occupationally exposed US residents (Wang et al., 2020)." Wang Y, eris A, Rifat MR, Ahmed SI, Aich N, Nguyen LV, Urik J, Eljarrat E, Vrana B, Jantunen LM, Diamond ML (2020) Measuring exposure of e-waste dismantlers in Dhaka Bangladesh to organophosphate esters and halogenated flame retardants using silicone wristbands and T-shirts, Sci Total Environ 720 :137480	Accepted.
ACAT/ICC /IPEN	22	107	Please exchange "overt" with "acute". - *Overt toxicity has been observed in birds as described in paragraph 110, with effects on liver enzyme activity and oxidative stress etc.*	Accepted.
ACAT/ICC /IPEN	24	120	Please insert: "Climate warming may exacerbate the mobilization and release of DP in polar environments as sequestered sources of DP in sea ice, glaciers, and permafrost are released into freshwater and marine environments."	Accepted. As this information was not discussed in the main document it was added in "4. Concluding statement "rather than in "3. Synthesis of information".
ACAT/ICC /IPEN	24	123	Please amend sentence as suggested: ".. and the structural similarity of DP to substances already listed ~~substances~~ in the Stockholm Convention	Accepted.
ACAT/ICC /IPEN	24	125	Please rewrite to: "Due to the POP properties and risks related to its widespread production and use, international action is warranted to control prevent further releases of DP."	Accepted
ACAT/ICC /IPEN	25	126	Please rewrite first sentence: "DP is persistent, bioaccumulative and undergoes long-range environmental transport, making emissions and releases of this substance a transboundary pollution problem including in remote areas.	Accepted. Text has been edited.
ACAT/ICC /IPEN	25	127	Add "hair" to the list in the first sentence.	Accepted.
ACAT/ICC /IPEN	25	129	Rewrite last sentence to "Furthermore, the combined effect of climate change and other environmental stressors adds to the risk posed by environmental pollutants by affecting ~~the~~ exposure levels, vulnerability	Accepted.

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			and adaptability of organisms as shown for Arctic organisms.	
POPRC - member -1			General : We would like to thank the drafter for the good work and compilation of this document !	-
POPRC-member-1	3	3	Comment to: "Additionally, the raw material hexachlorocyclopentadiene, used in the production of DP, may contain low levels of a number of impurities." - Why is the specification of the starting material important? Does it imply that these impurities are also relevant for DP ? Rather referring to the impurities of the starting material please list DP impurities here.	Text has been amended.
POPRC-member-1	3	10	Comment to: " However, DP show structural similarities with already listed POPs such as aldrin, chlordane, heptachlor, mirex, chlordecon which have neurotoxic and some also carcinogenic properties." - This statement should be justified in the text by a sound scientific endpoint specific read-across.	This sentence was removed.
POPRC-member-1	4	11	Please remove "human health" - This statement is not really substantiated from the paras. above.	Comment noted and not accepted since this is the standard phrase used in Stockholm Convention. It will be up to POPRC to decide how this wording will be in the end.
POPRC-member -1	5	18	Please include a para dealing with analytical methods of DP in products (if available), environmental matrices and biota. Please include the analytical issue of under-reporting of DPMA and availably of analytical standards.	Not accepted, we are of the opinion that this belongs to the RME and possible control measures. Some information was included to describe the possible underreporting of DPMA later in the risk profile.
POPRC-member-1	6	1.4	Why was the heading of the DRP format changed? Unclear to me what are « administrative actions » ?	Heading has been corrected to "1.4 Status of the chemical under international conventions" in accordance with the outline for Risk Profiles presented in document UNEP-

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				POPS-POPRC.1-10-AnnexIV.English.pdf
POPRC-member -1	6	21	Comment to " provide the same information, within 45 days." - In the form of a safety data sheet ?	"…the same information" was replaced with "…a safety data sheet" in the text.
POPRC-member-1	7	29	Please insert: mirex used as flame retardants	Accepted.
POPRC-member-1	8	38	Please specify "and more"	Text has been amended.
POPRC-member-1	8	38	Comment to "In these studies, anti-DP was present in higher concentration (approx. 3x) than syn-DP." - Unclear which studies? Only in storm water? As this ratio represents commercial products is this important here?	Sentence was deleted.
POPRC-member-1	9	42	These points may from additinal arguments for the conlcusion on persistence but should be mentioned as support after the strongest arguments and experimental evidence is presented	The text was edited/ reshuffled. The text on modeling was moved up and the text on monitoring data in sediments was moved down.
POPRC-member-1	9	42	Reporting the levels of the sediment core and a bit more background would help the reader to understand why this could be used to support the conclusion on persistence	Information from additional monitoring studies have been included in the text along with a more detailed description of the Qiu et al. (2007) study.
POPRC - member-1	9	44	Is DP in the applicability domain of the models used? Please clarify	We consider that DP is generally within the applicability domain of the models, with BioWin 5 and 6 being the models that have best coverage as Dechlorane plus and several substances with related structures are part of the training set. Dechlorane Plus is within the molecular weight range for the models. Additional text has also been included in the risk profile to clarify.
POPRC-member-1	9	45	Comment to " isomer-specific degradation or preferential adsorption does not play a significant role in soil " - Please report also findings for anti-DP o substantiate this finding. Please note that EU Annex XV dossier mentioned conflicting statements in the paper about the implications of the fanti value.	Text has been revised and further information on this study was added to the text.
POPRC-member-1	9	45	Please insert "sampled close to the Chinese manufacturing facility"	Accepted.

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POPRC-member-1	9	46	I could not locate information on microbial metabolic pathways in this section, please clarify.	Some information on microbial metabolic pathways has been included in the text.
POPRC-member-1	10	2.2.2.	General remark - include as supportive information : Benchmark approach with other POPs	This is included in Table 2 in the INF-doc.
POPRC-member-1	10	48	Comment to "Wang et al. 2019" - This study is very important for this section, but any details are missing. Include following information: 1.) exposure concentration 2.) BCFk or BCFss 3.) BCF lipid normalised? 4.) reliability, limitations? 5.) depuration rate constant, lipid normalized 6.) growth correction necessary?	Some more information were added, and more details were added in the INF-doc Table 2. 1) See answer to UK for more details about exposure. 2) Rate constants for uptake (ks) was 0.63 and 0.89 days for syn and anti-DP respectively. And for depuration (ke) 0.11 and 0.096 days, respectively. 3) BCF was not lipid normalized concentrations were measured in wet weight. 4) Study seems reliable. N=50, Three fish sampled on Day 1,2,3,4,6,8,10,16 and 32. 5) No, wet weight was used. 6) Not necessary since there were no significant alteration in growth.
POPRC-member-1	10	49	Please insert: .." ,though it is not considered as "criterion" for bioaccumulation."	Not accepted, we need to reduce words in the document.
POPRC-member-1	10	49	Comment to: "Furthermore, model calculation of the oral up-take of DP showed great agreement between modelling (Larisch and Goss, 2018) and experimental data (Tomy et al., 2008) indicating that up-take of super-hydrophobic chemicals like DP from food does take place without any anomalies. Uptake of DP is slow but will eventually result in substantial bioconcentration when substances are not metabolized (Larisch and Goss, 2018)." -Not sure, if this is really so relevant here. Better to use the space to report field studies that do not indicate biomagnification as outlined in the EU Annex XV dossier to have a complete picture for the conlcusion	This phrase has been revised. Values for field studies not indicating biomagnification are included in INF-doc Table 2.

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POPRC-member-	10	51	Stereo-selective elimination could be one factor, too, cf Li et al. 2019	Text has been amended.
POPRC-member-1	10	52	Comment to "highest concentration " - Please add the concentration range.	Not accepted, wording was changed as it was the fraction of anti-DP that was higher and not the total concentration. This sentence was deleted to shorten the document.
POPRC-member-1	11	52	Comment ot "similar sterioselectivity" -? seagrass and chicken	Yes, but this sentence was deleted to shorten the document.
POPRC-member-1	11	53	Please revirute as suggested: isomer specific experimental	This sentence was deleted to shorten the document.
POPRC-member-1	11	53	Please insert: ".... and quails in addition to at least 2 other DP dechlorinated analogs (Li et al. 2013)."	Partly accepted, as this information was better placed later in the paragraph.
POPRC-member-1	11	53	Comment to "analytical impurities": - Of the commercial products ?	Revised for clarification.
POPRC-member-1	11	53	Please insert: " In chicken embryo 12% and 28% of absorbed syn- and anti-DP were biotransformed, but dechlorinated metabolites could not be identified (Li et al. 2019)."	Not accepted, this seem more related to mass distribution of lipid (and DP) in the developing chicken embryo than metabolisms as such.
POPRC-member-1	11	54	Comment to " Field monitoring data suggest that DP is bioavailable and can exceed levels in biota that are of concern based on critical body burden considerations related to baseline narcosis (ECHA 2017b)." - This statement needs further explanation and more details. Please report the calculated body burdens to sustantiate « high » as stated in para. 55.	Not accepted.
POPRC-member-1	11	54	Comment to " high DP concentrations in blood and hair from workers" - Please give concentration in numbers.	A reference to table 10 in the INF-doc was inserted.
POPRC-member-1	11	58	Comment to " for listed POPs " - Please report the benchmark POPs	Text has been edited and information on benchmark POPs have been included.
POPRC-member-1	19	2.4.1	General: Please include if used study protocolls are validated.	Not accepted. All the experimental toxicity studies included relevant controls.

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POPRC-member-1	19	96	This para. is important to discuss testing of DP in aqueous media above the water solubility. Please move it later in the section and discuss that many study have been performed > water solubility and its impact	Not accepted. We believe it its best to keep first since this is relevant for most water exposure studies discussed.
POPRC-member-1	19	98	Comment to "hormesis response" - You only reported effects of chlorophyll at the highest dose, so difficult to see the hormesis response.	Phrase was deleted due to several comments.
POPRC-member-1	19	98	Comment to "two highest doses" in Gong et al 2018. - Please report the two highest doses.	Information was added.
POPRC-member-1	20	103	Please include: " In another experiment DP-exposed carp embryos showed DNA damage, increased mortality rate, delayed hatching time, reduced hatching rate, decreased body length, and increased morphological deformities (Li et al. 2020)." https://doi.org/10.1016/j.chemosphere.2020.126481	Accepted.
POPRC-member-1	20	105	Please insert: "(but changes not statistically significant)"	Accepted.
POPRC-member-1	21	111	Please revise as suggested: Other Marker of exposure and/or	Text has been revised.
POPRC-member-1		113	Please revise as suggested: The deadline for the registrant to provide these data is 21/12/2020 (ECHA website). It might be relevant to consider the results of the studies currently conducted (in vitro AMES test and a PNDT study) as an outcome of the compliance check (deadline 21/12/2020).	Information was added.
POPRC-member-1	22	117	Comment to " administration errors" - Uncertainty if dosing was correct	Some amendments were made to the text. Administration error led to perforation of the gastrointestinal tract in several animals and inflammatory response and tissue damage in lungs and cavity. In addition, viscosity of the vehicle led to administration difficulties in particular for the 5000 mg/kg dose. This gave both uncertainty of dosing and could also potentially

Source of Comment	Page	Para	Comments on the second draft of the risk profile on Dechlorane Plus and its isomers	Response
				have masked effects from DP exposure.
POPRC-member-1	22	117	Comment to "this effect" - Could also be an indication of effects on the thyroid axis	Text has been amended.
POPRC-member-1	23	118	Please insert: but with no association to DP isomers	Amendment made to the text.
POPRC-member-1	23	119	Comment to "sex hormones" - I could not locate data on sex hormones. If gene regulation is meant here please specifiy.	This was related to the fish studies and deleted for clarity.
POPRC-member-1	23	121	Please insert local and	Text has been edited.
POPRC-member-1	23	123	Please insert: One relevant mode of action could be the induction of due to oxidative stress that impacts several biological processes. Further data, including studies of longer duration and possibly different routes of exposure (e.g. inhalation could be an option, as oral up-take is rather low) might be essential to better assess the toxicity of DP.	Partly accepted.
POPRC-member-1	24	124	Dechlorane related compounds should be listed in this para. as well. E.g Dechlorane 602, 603	Comment noted, no amendments made to the text. There are only two in vitro toxicity data on 602 as far as we know, and furthermore these structures are not impurities of DP manufacturing.
POPRC-member-1	24	Table 5	Comment to Adverse effects: -Should indications for possible human toxicity be listed here as well?	Some amendment was done with addition of liver impairments. Potential endocrine modulating effects has also been observed in humans or human cells.
POPRC-member-1	24	131	Comment to human: -Not sure if experimental evidence is really sufficient for « significant adverse » human health effects, please use a wording that better addresses the data gaps and uncertainties.	Comment noted and not accepted since this is the standard phrase used in Stockholm Convention. It will be up to POPRC to decide how this wording will be in the end.